3.2

HEALTH AND SAFETY PLAN

for

ASARCO TACOMA SMELTER SITE STABILIZATION ACTIVITIES

ASARCO, Incorporated

March 12, 1987

SAMPLE
HEALTH AND SAFETY PLAN
CONSENT FORM
FOR
ASARCO TACOMA SMELTER SITE STABILIZATION PLAN

I have read the Health and Safety Plan pertaining to the work to be performed by _____ (insert name of Contractor firm) for activities related to the ASARCO-Tacoma Smelter Site Stabilization Plan.

I understand the contents of this Health and Safety Plan and agree to abide by its provisions. Any questions I had regarding the plan have been satisfactorily answered.

Name	Company/Agency	Address	Date

I hereby certify that to the best of my knowledge this list is current for _____ (month/year).

_____
Contractor Site Health and Safety Officer

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1.0 INTRODUCTION

The facilities of the former ASARCO-Tacoma Copper Smelter have been designated as a National Priorities List Superfund site under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA, effective October 17, 1986). Any hazardous waste sampling or cleanup activities associated with this site must be performed in accordance with an approved site-specific Health and Safety Plan designed to ensure that employees are adequately protected from the chemical and physical hazards present at the site. The plan must comply with the provisions of the OSHA Interim Final Standard to Protect Workers in Hazardous Waste Operations (51 FR 45654, December 19, 1986) under 29 CFR Part 1910.

This sample Health and Safety Plan has been prepared as a guide intended to outline the basic issues which must be considered by employees of ASARCO, Inc. and its contractors who will perform the work described in Attachment A to the Administrative Order on Consent, Site Stabilization Plan, dated August 20, 1986, including any subsequent revisions or modifications required during implementation of site stabilization activities. Each contractor will be responsible for developing and adhering to specific health and safety procedures based upon the guidelines contained in this sample Health and Safety Plan which address the hazards associated with their specific responsibilities under the Site Stabilization Plan.

1.1 SITE VISITORS

Visitors invited to observe field activities will be required to comply with provisions of this plan. Visitors may only enter work zones at the discretion of the contractor's Site Health and Safety Officer. Visitors who enter work zones under other authority (e.g., for the purpose of regulatory inspections) must either comply with provisions of this Health and Safety Plan, including signing the Health and Safety Consent Form, or accept full responsibility for following the provisions of their independent Health and

Safety Plan. It is anticipated that USEPA and WISHA personnel will utilize health and safety procedures developed by their respective agencies for their site-specific activities.

1.2 HEALTH AND SAFETY PLAN SCOPE

This Health and Safety Plan includes:

- Discussion of known or anticipated hazards to personnel performing work within the scope of the Site Stabilization Plan
- Recommended safety precautions and standard operating procedures (SOPs) designed to minimize the possibility of harm to field personnel and visitors
- Emergency procedures to be followed in the event of accidents

All personnel involved with site stabilization activities will be required to read this Health and Safety Plan and sign a statement acknowledging that they understand the material contained in the Plan and agree to abide by its recommendations and requirements.

2.0 GENERAL PROJECT INFORMATION

The ASARCO Tacoma Smelter facility has served for the past century as a primary copper smelter with related metals processing activities. At times, the facility specialized in custom smelting of ores rich in arsenic. The arsenic was recovered and processed for commercial sale. As the result of the smelting and refining activities at this site, structures to be demolished may be contaminated with arsenic, cadmium, lead, and possibly other metals; asbestos and asbestos-containing construction materials; and general construction materials which may produce nuisance dusts upon demolition.

Figure 2-1 shows the general site layout, including the area where demolition activities are scheduled to take place. Figure 2-2 is a more detailed map of the demolition areas.

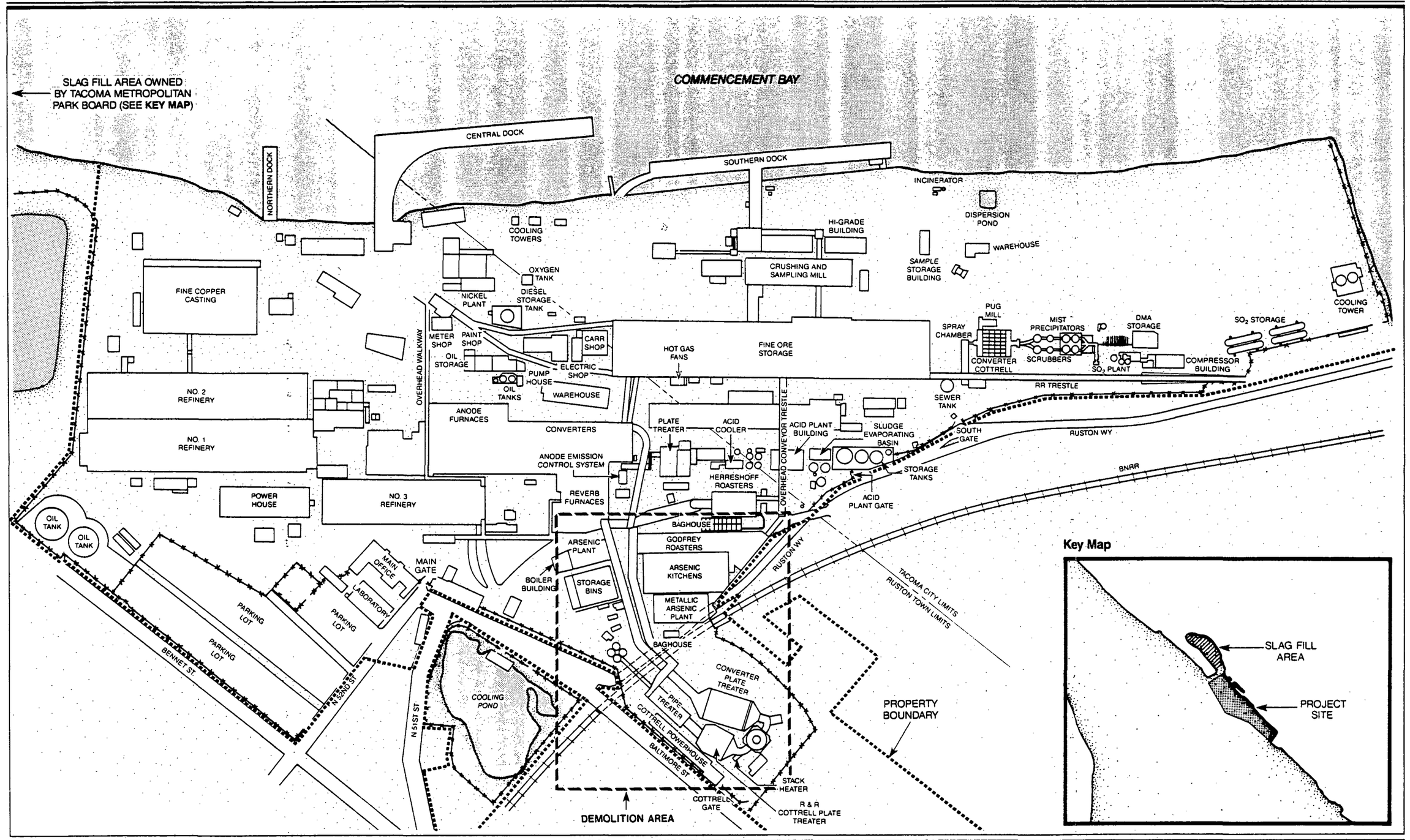

Figure 2-1.
ASARCO Tacoma Smelter Site General Layout

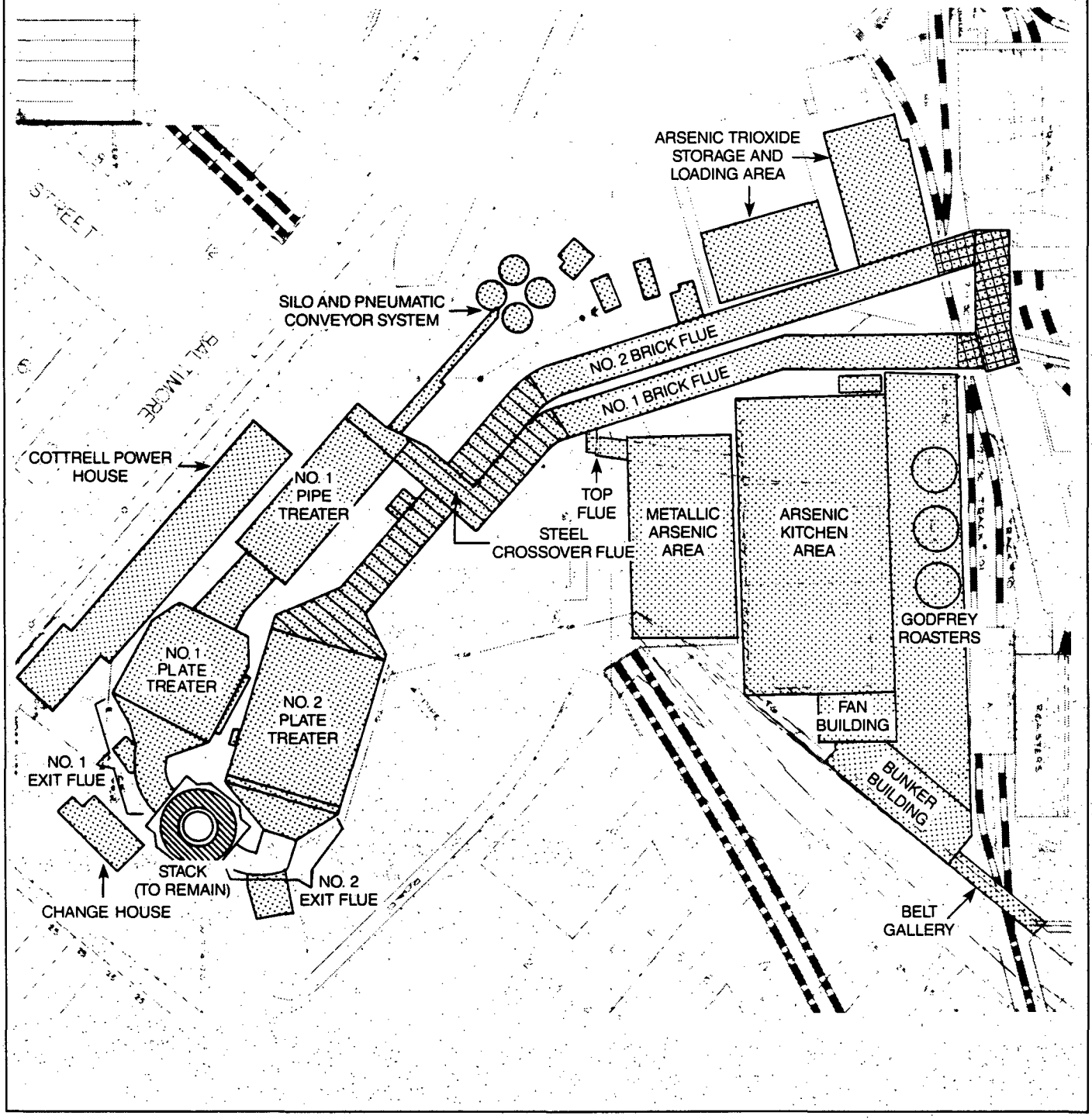

Figure 2-2.
ASARCO Tacoma Smelter Site
Detail of Demolition Areas

3.0 FIELD PERSONNEL QUALIFICATIONS

3.1 EMPLOYEE INFORMATION AND TRAINING

Each contractor has trained its own employees regarding hazards described in Section 6.0, with special emphasis on inhalation and skin contact with inorganic arsenic. Training shall also include use of personal protective equipment as outlined in Appendix C and decontamination procedures described in Appendix D. Each contractor has also reviewed the contents of this safety and health plan with each employee and shall document such training by completing the consent form included at the beginning of this plan.

3.2 MONITORING EQUIPMENT TRAINING

Each contractor will be responsible for obtaining consultant services or providing trained personnel to conduct monitoring for documenting the degree of exposure to specific contaminants experienced by their personnel. Trained personnel would be knowledgeable in the use of portable sampling pumps equipped with filter cassettes to sample for time-weighted average (TWA) exposures to airborne particulate contaminants as required by the WISHA inorganic arsenic standard (WAC 296-62-07347). Training in the use of upwind-downwind monitoring techniques must be included in the monitoring equipment training program where there is the potential for release of airborne contaminants including asbestos fibers.

3.3 FIRST AID TRAINING

Each contractor will be responsible for obtaining training for their own employees in first aid techniques. At least one member of each contractor team present on the site must hold current certification in first aid techniques, including cardiopulmonary resuscitation (CPR) training, equivalent to the 8-hour course administered by the American Red Cross. These employees are listed in Appendix G for each contractor.

3.4 ACCIDENT PREVENTION TRAINING

Each contractor will be responsible for developing and implementing an Accident Prevention Training Program which complies with the provisions of WAC 296-155 Section 110. The training program must be tailored to the Contractor's specific operations during site stabilization activities and must anticipate the types of accidents which might occur during those operations. The training program must include detailed explanation of written precautions and standard operating procedures designed to prevent accidents during site stabilization activities. Included as Appendix G is a description of each contractor's accident precaution program and safety program.

4.0 PROJECT RESPONSIBILITIES

4.1 PROJECT HEALTH AND SAFETY OFFICER

The ASARCO Project Health and Safety Officer is responsible for the contents of, distribution of, and modifications to this Health and Safety Plan. The Project Health and Safety Officer's primary responsibilities consist of informing the Site Health and Safety Officer designated by each contractor of the hazards associated with the work to be performed by the contractor, and of the general types of safety precautions that may be necessary to protect against such hazards. Such training will include the general contents of this health and safety plan and specific information on arsenic included in Appendix H. The contractor health and safety officer will sign the form included in Appendix H documenting that he has received such information and agrees to abide by the provisions set forth in those Appendices.

The Project Health and Safety Officer will also serve as a central contact regarding health and safety issues encountered at the site. The designated ASARCO Project Health and Safety Officer for Site Stabilization activities is Mr. Curt Dungey (ASARCO, Inc.).

4.2 SITE HEALTH AND SAFETY OFFICER

Each contractor will be responsible for designating their own qualified Site Health and Safety Officer. Minimum qualifications for persons directly responsible for supervising employees engaged in hazardous waste operations are described in the OSHA Interim Final Standard to Protect Workers in Hazardous Waste Operations (51 FR 45654, December 19, 1986). Because of the difficulties associated with meeting these training requirements, as an interim measure contractors will be required to submit the name of their designated Site Health and Safety Officer and that individual's current qualifications, including the following:

- Certifications
- Other specialized training
- Experience in performing work on-site at hazardous waste sites

The Site Health and Safety Officer is responsible for contractor-specific on-site decisions related to daily field operations. Specific duties will include the following:

- Recommends stopping work if any operation threatens worker or public health or safety
- Selects protective clothing and equipment
- Periodically inspects protective clothing and equipment
- Ensures that protective clothing and equipment are properly stored and maintained.
- Controls entry and exit at the Access Control Points
- Coordinates safety and health program activities with the Project Health and Safety Officer
- Confirms each team member's suitability for work based on a physician's recommendation
- Monitors the work parties for signs of stress, such as cold exposure, heat stress, and fatigue
- Monitors onsite hazards and conditions
- Participates in the preparation of and implements the Contractor Health and Safety Plan

- Conducts periodic inspections to determine if the Contractor Health and Safety Plan is being followed

- Knows emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department

- Notifies, when necessary, local public emergency officials

- Coordinates emergency medical care

The Site Health and Safety Officer will have the authority to select protective clothing and health and safety monitoring equipment based on the guidelines contained in this Health and Safety Plan or augment those plans as necessary and may stop their specific site work if any activity or condition threatens worker or public health or safety. The Site Health and Safety Officer will inform the Project Health and Safety Officer as soon as reasonably possible whenever there are questions regarding the safety of continued operations.

4.3 DECONTAMINATION STATION OFFICER

Each contractor will be responsible for designating their own qualified Decontamination Station Officer responsible for overseeing the decontamination of the contractor's personnel, equipment, and samples prior to their leaving the site. Each contractor's designated Decontamination Station Officer is listed in Appendix G. Specifically, the Decontamination Station Officer:

- Is responsible for decontamination procedures, equipment, and supplies

- Prepares procedures for emergency decontamination of contaminated accident victims

- Sets up decontamination lines and the decontamination solutions appropriate for the type of chemical contamination on site
- Controls the decontamination of all equipment, personnel, and samples from the contaminated areas
- Assists in the disposal of contaminated clothing and materials
- Ensures that all required equipment is available
- Advises medical personnel of potential exposures of victims and consequences

Mr. Curt Dungey of ASARCO, Inc., will serve as coordinator of decontamination activities.

Minimum qualifications for persons serving in the role of Decontamination Station Officer are described in the OSHA Interim Final Standard to Protect Workers in Hazardous Waste Operations (51 FR 45654, December 19, 1986). Appendix D contains guidelines for the decontamination of personnel and vehicles which will be used by the Decontamination Station Officer in preparing a decontamination plan specific to the contractor's site stabilization activities.

5.0 REVISIONS AND ADDITIONS TO HEALTH AND SAFETY PLAN

All fieldwork will immediately cease in the event that unexpected hazards such as the following are encountered:

- Detection in the work zone of unexpected chemical or physical hazards approaching or exceeding established exposure limits or guidelines for such hazards

- Known or suspected malfunction of critical equipment (e.g., personal protection equipment, monitoring equipment, or other equipment affecting health and safety)

- Accidents of unknown cause (e.g., resulting in injury or equipment damage)

Fieldwork will not resume until the hazardous situation is corrected. At the discretion of the ASARCO Project Health and Safety Officer, all fieldwork may be suspended until a revised Health and Safety Plan has been prepared. The authority for cessation may rest with any party responsible for overseeing site stabilization activities. It is the responsibility of each and every on-site employee to ensure that any observation made of potentially hazardous situations is immediately communicated to their Site Health and Safety Officer or other person in a position to take direct action to mitigate the potentially hazardous situation.

Recommendations pertaining to personal protection equipment and/or monitoring protocols may be revised as new monitoring and analytical data become available.

6.0 HAZARD EVALUATION

6.1 SAFETY HAZARDS

Each contractor has provided written plans specific to its site stabilization activities describing safety precautions to be taken. These are described in Appendix G. Safety precautions may include demolition (in accordance with WAC 296-155 Section 775), fall protection (in accordance with WAC 296-155 Section 225), accident prevention (in accordance with WAC 296-155 Section 110), and other regulations that may apply.

6.2 CHEMICAL SUBSTANCES OF CONCERN

The following substances are known or suspected to be present on site. The primary hazards associated with each are identified.

Substance Involved	Primary Hazards
Arsenic	Toxic on inhalation, ingestion; skin irritant; known human carcinogen
Arsine gas	Toxic on inhalation; garlic odor detectable only above safe levels; suspected human carcinogen
Asbestos	Known human lung carcinogen; suspected carcinogen by ingestion
Cadmium	Toxic on inhalation, ingestion; suspected human carcinogen
Dimethylaniline	Toxic on inhalation, ingestion, skin contact
Lead	Toxic on inhalation, ingestion

A summary of the relevant standards and exposure guidelines for these substances is given in Appendix B.

6.3 RESPIRATORY HAZARDS

All of the substances listed in Section 6.2 may be harmful upon inhalation. The major anticipated respiratory hazards are related to inhalation of airborne particles potentially contaminated with arsenic, cadmium, lead, or other metals present as by-products of smelting and refining processes. The contaminant likely to be present in the largest concentrations is inorganic arsenic in the form of arsenic trioxide dust (As_2O_3). Asbestos fibers, arsine gas, and organic vapors may also be present onsite.

Highly toxic arsine gas may be formed by the reaction of compounds containing arsenic and acids, particulary when reducing agents such as aluminum, magnesium, or zinc are present. For this reason, contractors are urged not to allow use of materials containing these metals (e.g. zinc-coated galvanized steel equipment) where there is any possibility that they may contact arsenic-containing materials. Arsine gas rapidly causes hemolysis of red blood cells. Arsine poses a special hazard due to the narrow margin of safety between the detection limit achievable using length-of-stain detector tubes (i.e., approximately 0.01 ppm) and the Immediately Dangerous to Life and Health level (6 ppm). The characteristic garlic odor of arsine gas is detectable only above safe concentrations. **Use of air-purifying respirators is not approved for protection against inhalation of arsine.** Assuming the above precautions are followed, the generation of arsine gas is considered unlikely to occur.

During demolition activities, the potential exists for exposure to airborne asbestos fibers released from building insulation materials. Asbestos is a known human lung carcinogen (i.e., leads to pleural mesotheliomas and other lung cancers) and has been associated with a number of other serious respiratory illnesses (e.g., asbestosis).

Organic vapor hazards (e.g. dimethylaniline) are not likely to be present in areas designated for demolition.

6.4 CONTACT HAZARDS

Hazards include the potential for harmful skin contact and/or absorption of certain contaminants from soil, water, or air. Arsenic, in particular, is capable of causing localized skin irritation from contact or exposure to high levels in the air. Employees should be aware that arsenical dust on respirator facepieces can cause skin irritation on the face. Workers should avoid allowing the facepiece sealing surface from coming into contact with dirty work clothes.

6.5 THERMAL STRESS HAZARDS

Work activities may expose field personnel to excessively cold or warm temperatures. Use of impermeable protective garments may lead to heat exhaustion or heat stroke. Training on the hazards of heat-induced illness is appropriate for some work operations. Prolonged exposure to cold may lead to discomfort, numbness, reduced efficiency, or frostbite. As warm weather approaches, the possibility of heat-induced illness associated with use of personal protective equipment will be discussed during a periodic safety meeting.

7.0 WORK ZONE DEFINITION

In order to reduce the spread of contaminants from contaminated areas to clean areas, the site will be divided into work zones where specific operations will occur. The establishment of work zones will help ensure that: 1) personnel are properly protected against the hazards where they are working, 2) work activities and contamination are confined to the appropriate areas, and 3) personnel can be located and evacuated in an emergency.

For practical purposes, each work area may be divided into three functional types of work zones:

- **Exclusion Zone:** the contaminated area
- **Contamination Reduction Zone (CRZ):** area where decontamination activities take place
- **Support Zone:** non-contaminated area where workers and support crew should not be exposed to hazardous conditions.

Contaminated areas where site stabilization activities are not currently scheduled to take place shall be marked off and/or cleaned up in the same fashion as other areas designated as Exclusion Zones. These "non-work areas" must be treated in the same fashion as active Exclusion Zones, and site stabilization personnel are prohibited from entering these areas without direction from the Site Health and Safety Officer on appropriate levels of protection and specified operating procedures for entering these areas.

The various work zones for site stabilization activities are defined on Figure 7-1. Locations for general decontamination are shown on Figure 7-2.

Procedures for handing site emergency incidents, either on-site or off-site, including spills, fires, or other emergency conditions, are outlined in the OSHA Interim Final Standard to Protect Workers in Hazardous Waste Operations

(51 FR 45654, December 19, 1986). For this particular site, the procedures for handling emergencies on-site and off-site are outlined in Section 10.0 of this plan.

All incidents of spills or other on-site or off-site emergencies shall be immediately reported to the Site Safety Officer, who is responsible for communicating the circumstances of the emergency to the Project Health and Safety Officer and the USEPA On-Site Coordinator. The Project Health and Safety Officer (or any other capable person) shall be responsible for notifying the disaster, fire and/or emergency response contacts of the appropriate local, state, and federal agencies of the location, nature, and extent of the emergency situation.

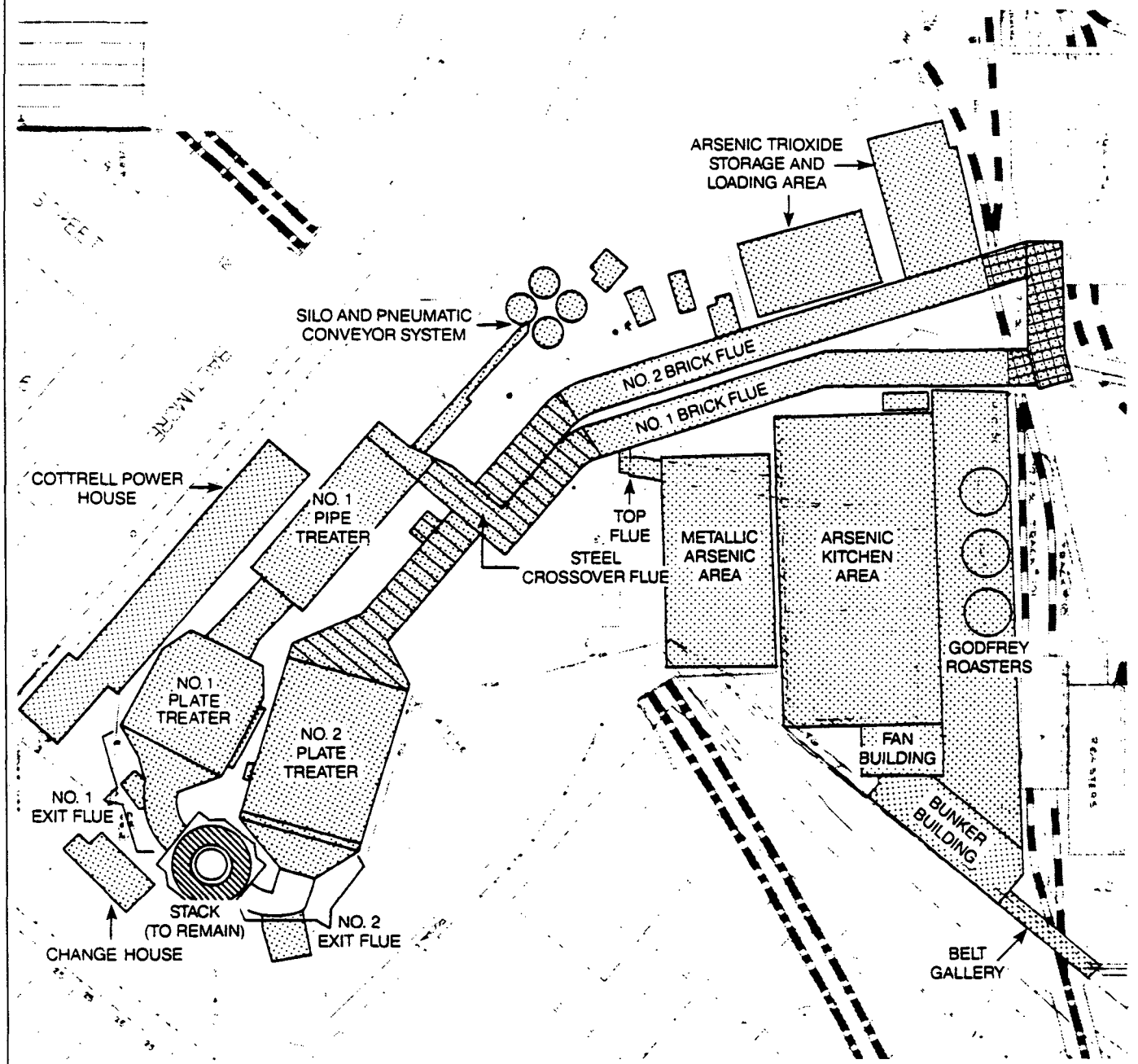

Figure 7-1.
Exclusion Zone Area

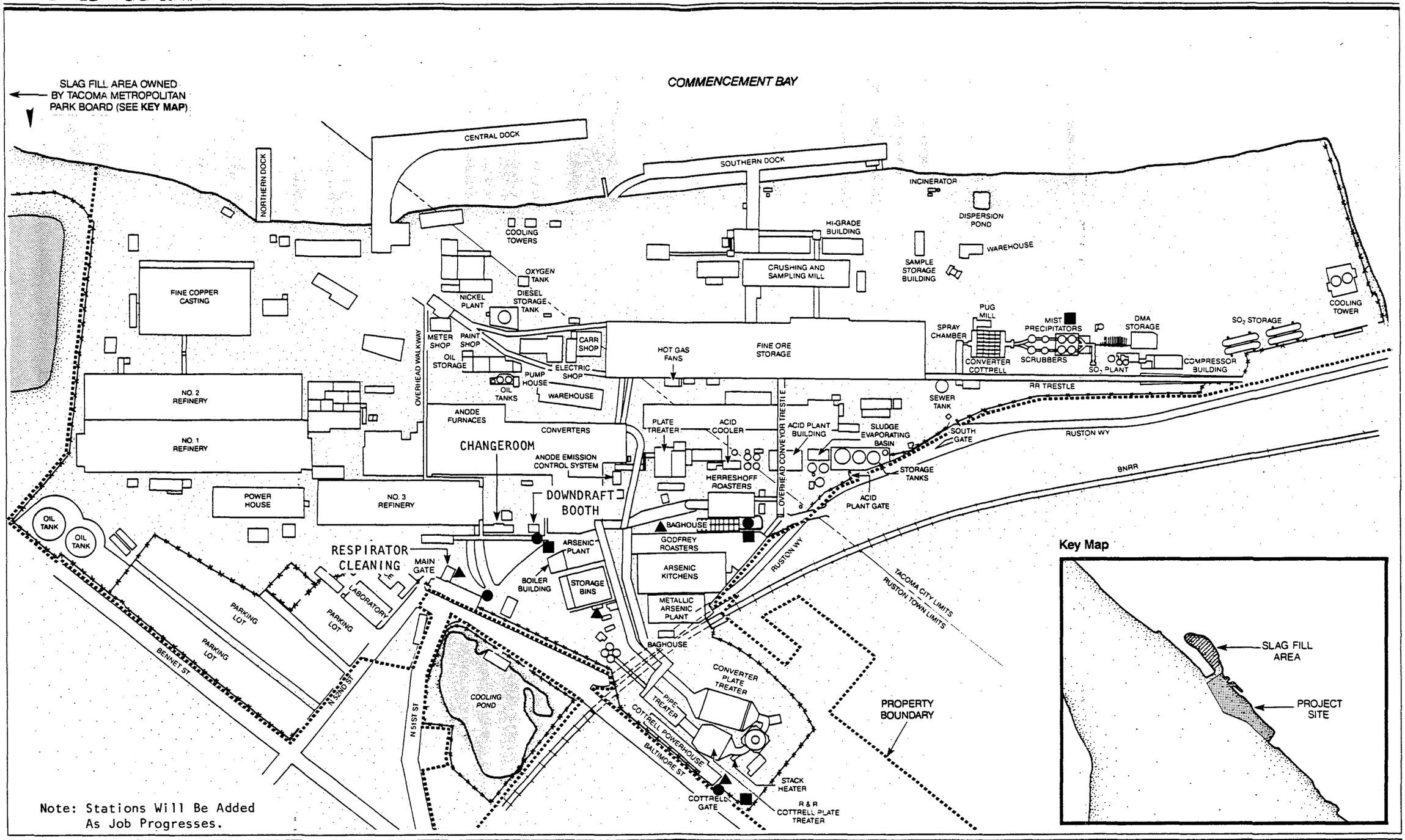

Figure 7-2.
Decontamination Facilities

8.0 SAFETY EQUIPMENT

8.1 PERSONAL PROTECTION EQUIPMENT

8.1.1 Introduction

Protective clothing shall be used whenever there is the possibility of exposure to chemical or physical hazards onsite. Monitoring equipment will be used to assess the adequacy of the personal protection equipment chosen, and should be useful in estimating potential exposures of personnel.

8.1.2 Fit-Testing Program

Employees will not be permitted to work in environments requiring respirators until they have undergone qualitative fit-testing by a qualified individual (including challenge with irritant smoke) provided by the contractor to their employees to ensure the proper functioning of their equipment (see fit-testing protocol in new Federal OSHA asbestos standard, 29 CFR 1910.1001, Appendix C). The designated individual for conducting fit-testing is listed in each contractor's health and safety requirements in Appendix G. Facial hair which prevents proper facepiece seal must be shaven. Standard eyeglasses may not be worn with full-facepiece respirators. Use of contact lenses with a full facepiece respirator is prohibited by law (29 CFR Part 1910.134[e][5][ii]). Each contractor will ensure that personnel requiring vision correction will be supplied with prescription ground lenses to be used with a spectacle kit designed by the respirator manufacturer to fit inside the respirator facepiece while maintaining the integrity of the facepiece-to-face seal.

8.1.3 Selection of Levels of Protection

The Project Health and Safety Officer will be responsible for recommending personal protective equipment for various field activities and site conditions, based on a review of known and suspected contaminants and their

toxicologic or other hazardous properties. Each Contractor's Site Health and Safety Officer will be responsible for onsite decisions regarding daily field activities, including selection of personal protection equipment in accordance with Section 9.2.2 and Appendix C.

Based on an initial evaluation of known potential hazards on site, the following levels of personal protection are required for particular site stabilization activities:

General Site Activity	Recommended Minimum Level of Protection
Vacuuming wet or dry material; water washdown of buildings or other structures	Modified level C; full facepiece recommended for protection against extremely dusty conditions; options for upgrade to powered air purifying respirator
Operators of powered equipment; operators of dust suppressions hoses; general demolition	Modified level C; half-mask recommended; options for upgrade to full facepiece
Support Activities outside of work zones	Level D; splash gear if appropriate

It should be noted that several of the compounds known or suspected to be present on the site (i.e., arsenic, arsine, asbestos, cadmium) are known or potential human carcinogens. Exposure to these substances will be kept to the minimum level practicable.

8.2 MONITORING EQUIPMENT

8.2.1 Monitoring Responsibilities

Each contractor will be responsible for evaluating and monitoring their work area to determine potential exposures of their personnel to surface and

airborne contaminants. It is expected that the primary concern for most activities will be exposures to dusts containing arsenic and/or asbestos, and that particulate sampling devices will be necessary to establish levels of airborne contaminants in the breathing zone of site stabilization personnel.

At the onset of demolition or other activities, each contractor will obtain personal monitor air samples from at least two members of the crew on two separate shifts to characterize worker exposure to arsenic or other metals during a particular job function. If concentrations of any measured parameter is above applicable WISHA standards, appropriate respiratory protection will be required as outlined in Appendix B. At least one personal monitor and one upwind/downwind sample for asbestos will be collected to assess potential asbestos exposure during demolition of brick structures with tar coating. Other asbestos monitoring will be conducted as outlined in the asbestos contractor's specific plan in Appendix G.

8.2.2. Portable Sampling Pump with Filter Cassette

Arsenic and asbestos sampling will be conducted in accordance with the most recent WISHA standards. Results of personal monitoring will be submitted to EPA on a weekly basis.

A standard industrial hygiene personal sampling pump with Millipore-type filter cassette will be worn by selected field personnel exposed to airborne particulates potentially containing toxic metals as discussed in 8.2.1. The filter cassettes will be sent to an analytical laboratory for determination of Time Weighted Average (TWA) concentrations of inorganic arsenic. It is assumed that arsenic concentrations will be much greater than concentrations of other metals (e.g., cadmium, lead) and therefore may serve as an acceptable indicator of general levels of contamination. If preliminary results indicate high concentrations of arsenic, at the discretion of the Contractor Site Health and Safety Officer additional contaminants may be sampled using this methodology.

If the results of the Sampling and Analysis activities performed under the Remedial Investigation indicate significant concentrations of other contaminants, the Project Health and Safety Officer may recommend the use of additional monitoring equipment to ensure adequate protection of contractor personnel from exposure to these hazards.

8.3 SAFETY EQUIPMENT

Each Site Health and Safety Officer shall have a copy of Figure 7-2 showing the locations of safety equipment including, but not limited to, first aid kits, portable fire extinguishers and emergency eye wash stations. Maps will also be posted at several locations on-site.

8.3.1 First Aid Kits

First aid kits meeting WISHA requirements are conveniently located such that field personnel will have ready access to them during field activities.

8.3.2 Portable Fire Extinguishers

Portable fire extinguishers meeting WISHA requirements are conveniently located such that field personnel will have ready access to them during field activities.

8.3.3 Emergency Eye Wash Station

Portable emergency eye-wash stations meeting WISHA requirements are conveniently located such that field personnel will have ready access to them during field activities. The stations must provide a minimum of 15 minutes of continuous flushing capacity (in accordance with NIOSH first aid guidelines for arsenic). The stations will be supplied with clean tap water changed daily and will be maintained full at all times. Employees without ready access to the above-mentioned station will be provided with personal size bottles containing a minimum of four ounces of sterile phosphate

buffering solution at pH 6.9 (e.g., Bullard Model No. 70-54) to be carried on the person at all times as temporary first aid until flushing for a minimum of 15 minutes may be accomplished.

9.0 GENERAL SAFETY PROCEDURES

9.1 MEDICAL SURVEILLANCE/BIOLOGICAL MONITORING

Each contractor has established a medical surveillance program which complies with WISHA regulations and guidelines for the specific activities being performed under the Site Stabilization Plan. Each contractor will also be responsible for selecting the specific medical surveillance program elements and biological monitoring parameters which will serve to verify that their employees have been adequately protected from identified site hazards.

Each contractor's baseline physical examination is included in Appendix G.

At the discretion of the contractor Site Health and Safety Officer, employees exposed to potentially high levels of hazard may be re-examined or required to undergo additional testing on a case-by-case basis.

9.2 STANDARD OPERATING PROCEDURES

9.2.1 Site Control

When appropriate, the Site Health and Safety Officer will clearly delineate the various work zones using signs, labels, fluorescent tape, or traffic cones, as warranted by site conditions and planned activities. Unauthorized personnel will be prevented from entering the exclusion zone and contamination reduction zone.

9.2.2 Required Action Levels Based on Monitoring

The following are actions required to be taken as the result of the specified monitoring observations:

Monitoring Parameter	Observed Level	Required Action
Arsenic, inorganic (as As)	Greater than 5 ug/m^3 but less than 10 ug/m^3 (8-hr TWA)	Respirators advised, but not required; additional air monitoring required under WAC 296-62-07347
	Greater than 10 ug/m^3 but not greater than 100 ug/m^3 (8-hr TWA)	Half-mask air-purifying respirator equipped with high-efficiency ("HEPA") filter or any half-mask supplied air respirator required
	Not greater than 500 ug/m^3 (8-hr TWA)	Full facepiece air-purifying respirator equipped with high-efficiency ("HEPA") filter or any full facepiece supplied air respirator or any full facepiece self-contained breathing apparatus required
	Not greater than 1,000 ug/m^3 (1 mg/m^3) 8-hr TWA	Powered air-purifying respirators in all inlet face coverings with high-efficiency ("HEPA") filters or full-face supplied air respirators operated in positive pressure mode required
	Not greater than 10,000 ug/m^3 (10 mg/m^3) 8-hr TWA	Full-face supplied air respirators operated in positive pressure mode required
Arsine	Detectable at levels greater than 0.01 ppm	Withdraw immediately; no entry except rescue using Level B (SCBA)

Monitoring Parameter	Observed Level	Required Action
Asbestos	Greater than 0.1 fiber/cc	Action based on quantitative protection factor of respirator and discretion of Project Health and Safety Officer in accordance with WAC 296-62-07517 and proposed revision, WAC 296-26-077 but in all cases to include at least use of an appropriate air-purifying respirator equipped with high-efficiency ("HEPA") filter approved by NIOSH for use against dusts, fumes and mists having a TWA less than 0.05 mg/m^3 and asbestos-containing dusts and mists and radionuclides
Lead, inorganic fumes and dusts, as Pb	Not in excess of 0.5 mg/m^3	Half-mask, air purifying respirator equipped with high efficiency ("HEPA") filters required
	Not in excess of 2.5 mg/m^3	Full facepiece, air purifying respirator equipped with high efficiency ("HEPA") filters required

9.2.3 Notification of Local Emergency Response Personnel

The Project Health and Safety Officer has notified, in writing, the local fire department, local hospitals, local emergency medical clinics, and city traffic control personnel regarding the nature of the work to be performed at the site and the time frame in which the work is to be accomplished. The fire department will be provided with information necessary for preparation of procedures which allow emergency response while minimizing the spread of

contaminants. Hospitals and medical clinics will be provided with information on the chemical substances at the site such that procedures for appropriate emergency medical treatment may be prepared and such that procedures for emergency decontamination of contaminated victims may be prepared. City traffic control personnel will be provided with information regarding conditions potentially requiring emergency closure of local roadways or the tunnel near the ASARCO property.

9.3 COMMUNICATION PROCEDURES

Due to the complexity of site stabilization activities and the number of employees of various contractors who will be present on the site, communications procedures have been established to ensure the smooth flow of operations and rapid response to emergency situations.

ASARCO, Inc. will maintain a radio communication system which will be used by its employees.

Each contractor shall coordinate communication channels with ASARCO, Inc. such that emergency communications may be readily maintained by walkie-talkie, telephone, or other means. It is anticipated that contractors will each operate on a unique walkie-talkie frequency so as not to interfere with the communications of other contractors. Where appropriate, Mr. Curtis Dungey of ASARCO, Inc. will be provided with a means of communicating directly with a contact person responsible for the daily activities of a given contractor (e.g. a walkie-talkie or paging device).

9.4 DECONTAMINATION PROCEDURES

Personnel, vehicles, and other equipment leaving the Exclusion Zone will be thoroughly decontaminated using a modified level C decontamination protocol. The primary concern will be the removal of dusts and liquids contaminated with arsenic and other metals. Particular care should be taken to avoid skin contact with contaminated materials. Decontamination equipment and stations to be used are detailed in Appendix D.

Contractors involved in the removal and disposal of asbestos will follow standardized, approved methods for decontamination separate and distinct from the methods described above. Asbestos-removal contractors will not share decontamination facilities with other site-stabilization contractors until they have gone through their own primary decontamination. This procedure is described in Appendix G.

10.0 EMERGENCY PROCEDURES

10.1 GENERAL PROCEDURES

All emergencies will be immediately reported by phone using 911.

In the event of an emergency, the Contractor Site Health and Safety Officer will immediately arrange for first aid to victims, if necessary, and will summon assistance as soon as the situation permits. Emergency routes to local medical facilities are given in Appendix F.

10.2 NOTIFICATION

In the event of any emergency not limited to a minor first aid case, the Contractor Site Health and Safety Officer will immediately notify any or all of the appropriate contacts listed in the Appendix. Medical treatment should be coordinated through the contacts at the Contractor's occupational health clinic whenever possible, due to their familiarity with the contractor's medical surveillance program and with the nature of the potential exposures. The contractor's occupational health clinic will be provided with a copy of this Health and Safety Plan by the contractor and any pertinent revisions or supplementary information required will also be forwarded. For most of the contractors, this clinic is First Care Medicenter.

10.3 DOCUMENTATION

Any incident involving injury, illness, or other emergency will require documentation of the incident in a follow-up report.

APPENDICES

A. EXAMPLE BASELINE MEDICAL MONITORING EXAMINATION

B. OCCUPATIONAL STANDARDS AND EXPOSURE GUIDELINES FOR CONTAMINANTS OF CONCERN

C. GUIDELINES FOR PERSONAL PROTECTIVE EQUIPMENT FOR VARIOUS LEVELS OF PROTECTION

D. GUIDELINES FOR DECONTAMINATION OF PERSONNEL AND VEHICLES

E. EMERGENCY NOTIFICATION CONTACTS/PHONE NUMBERS

F. EMERGENCY ROUTES TO HOSPITAL

G. CONTRACTOR - SUBMITTED PLANS

H. INFORMATION AND TRAINING TO CONTRACTOR

APPENDIX A

EXAMPLE BASELINE MEDICAL MONITORING EXAMINATION

Suggested evaluations for all employees selected to participate in the overall corporate medical surveillance program:

A. History and Physical Examination (including):
   1) Medical and Occupational History, including smoking history
   2) Vision testing using Titmus instrumentation
   3) Blood pressure, pulse rate, oral temperature
   4) Height and weight
   5) Physician-administered physical exam, including nasal and skin exam per arsenic standard requirements (WAC 296-62-07347)

B. Audiometric hearing evaluation

C. Chest x-ray; minimum of single view, 14" by 17" posterior-anterior, with interpretation (performed on initial exam and then every other year, unless otherwise clinically indicated)

D. Urinalysis with microscopic exam

E. Complete blood count (CBC with differential)

F. Blood chemistry profile (including):
(creatinine, glucose, calcium, phosphorus, GGT, GOT, BUN, alkaline phosphatase, cholesterol, HDL/cholesterol ratio, triglyceride, total protein, albumin, total bilirubin)

G. Pulmonary function test

H. Electrocardiogram; 12-lead with interpretation

Supplementary tests for specified employees:

I. Blood lead test

J. 24-hr urine test for arsenic

APPENDIX B

OCCUPATIONAL STANDARDS AND EXPOSURE GUIDELINES FOR CONTAMINANTS OF CONCERN

Relevant standards and exposure guidelines:

- Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs)
- National Institute for Occupational Safety and Health (NIOSH) Immediate Danger to Life and Health (IDLH) guidelines
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs)
- State of Washington Department of Labor Permissible Exposure Limits and other applicable regulations

TABLE B.1

ASARCO TACOMA SMELTER SITE STABILIZATION PLAN
OCCUPATIONAL STANDARDS AND EXPOSURE GUIDELINES FOR CONTAMINANTS OF CONCERN

CAS #	SUBSTANCE	OSHA PEL	ACGIH TLV	NIOSH IDLH LEVEL	WA STATE DEPT. OF LABOR
7740-38-2	Arsenic and compounds (as As)	10 µg/m3 8-hr TWA	0.2 mg/m3 (200 µg/m3) TLV-TWA	Ca	10 µg/m3 8-hr TWA WAC 296-62-07347
7784-42-1	Arsine	0.05 ppm (0.2 mg/m3; 200 µg/m3) 8-hr TWA	0.05 ppm (0.2 mg/m3) TLV-TWA	Ca 6 ppm	0.05 ppm (0.2 mg/m3) 8-hr TWA WAC 296-62-07515
1332-21-4	Asbestos	< 0.2 fibers/cc longer than 5 micrometers (8-hr TWA) < 1.0 fibers/cc longer than 5 micrometers (ceiling)	< 0.2 to 2 fibers/cc, depending on mineral type Designated Human Carcinogen Type A1a	Ca	< 0.2 fibers/cc longer than 5 micrometers (8-hr TWA) < 1.0 fibers/cc longer than 5 micrometers (ceiling) WAC 296-62-07517; revisions to be released under WAC 296-62-077

TABLE B.1 (continued)

ASARCO TACOMA SMELTER SITE STABILIZATION PLAN
OCCUPATIONAL STANDARDS AND EXPOSURE GUIDELINES FOR CONTAMINANTS OF CONCERN

CAS #	SUBSTANCE	OSHA PEL	ACGIH TLV	NIOSH IDLH LEVEL	WA STATE DEPT. OF LABOR
7440-43-9	Cadmium dust (as Cd)	0.2 mg/m3 8-hr TWA 0.6 mg/m3 ceiling	0.05 mg/m3 TLV-TWA	Ca 40 mg/m3	0.05 mg/m3 8-hr TWA WAC 296-62-07515
121-69-7	Dimethylaniline, N,N-	5 ppm (25 mg/m3) 8-hr TWA	5 ppm (25 mg/m3) TLV-TWA 10 ppm (50 mg/m3) TLV-STEL SKIN designation	100 ppm	5 ppm (25 mg/m3) 8-hr TWA WAC 296-62-07515 SKIN designation

TABLE B.1 (continued)

ASARCO TACOMA SMELTER SITE STABILIZATION PLAN
OCCUPATIONAL STANDARDS AND EXPOSURE GUIDELINES FOR CONTAMINANTS OF CONCERN

CAS #	SUBSTANCE	OSHA PEL	ACGIH TLV	NIOSH IDLH LEVEL	WA STATE DEPT. OF LABOR
7439-92-1	Lead, inorganic fumes and dusts (as Pb)	0.05 mg/m3 8-hr TWA	0.15 mg/m3 TLV-TWA	Variable	50 µg/m3 (0.05 mg/m3) 8-hr TWA WAC 296-26-07521

NOTES:

CAS #: Chemical Abstracts Service registry number for substance
OSHA PEL: Occupational Safety and Health Administration, Permissible Exposure Limit
NIOSH: National Institute of Occupational Safety and Health
ACGIH TLV: American Conference of Governmental Industrial Hygienists, Threshold Limit Value
IDLH: Immediately Dangerous to Life and Health
TWA: Time-Weighted Average (generally 8-hr)
STEL: Short-Term Exposure Limit (15-min TWA)
Ca: NIOSH has recommended that this substance be treated as a potential human carcinogen
SKIN Designation: indicates potential for significant absorption of substance through skin contact

APPENDIX C

GUIDELINES FOR PERSONAL PROTECTIVE EQUIPMENT FOR VARIOUS LEVELS OF PROTECTION

MODIFIED LEVEL C PROTECTION

Personal Protection Equipment

- Air-purifying respirator (currently NIOSH/MSHA-approved under 30 CFR Part 11) with high efficiency ("HEPA"-type) particulate filters approved for protection against dusts, fumes, and mists having a TWA less than 0.05 mg/m^3; and asbestos-containing dusts and mists; and radionuclides.

  Options:

  - half-mask facepiece (low to moderate dust levels)
  - full-facepiece (high dust levels)
  - powered air-purifying respirator (extremely high dust levels)
  - canister-type ("gas mask"; not recommended for this site)

- Chemical resistant clothing (optional)

- Coveralls (disposable or freshly laundered daily)

- Long cotton underwear (optional)

- Outer work gloves

- Liner gloves (optional)

- Rubber or neoprene work boots, chemical resistant, steel toe and shank

- Boot covers, disposable outer protection (optional)

- Hard hat (face shield may be required by WISHA for certain demolition activities)

- 2-way walkie-talkie (optional)

LEVEL D PROTECTION

Level D protection is primarily a work uniform. It can be worn only in areas where there is no possibility of contact with contamination.

Personal Protection Equipment

- Coveralls
- Gloves (optional)
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Safety glasses or chemical splash goggles (optional)
- Hard hat (face shield) (optional)

APPENDIX D

GUIDELINES FOR DECONTAMINATION OF PERSONNEL AND VEHICLES

Decontamination guidelines:

- o Modified Level C Decontamination of Personnel
- o Decontamination of Vehicles

MODIFIED LEVEL C DECONTAMINATION OF PERSONNEL

A. EQUIPMENT WORN

The modified decontamination procedure outlined is for workers wearing modified Level C protection consisting of:

- o Disposable dustproof suit or reusable work coveralls
- o Air-purifying respirator
- o Hard hat
- o Waterproof rubber or neoprene boots with steel toe and steel shank
- o Gloves

B. DECONTAMINATION PROCEDURES (EXCLUDING ASBESTOS-REMOVAL CONTRACTORS)

Note: Asbestos-removal contractors will follow a set of specially-designed decontamination procedures for asbestos-removal operations, and will not share decontamination facilities with other site-stabilization contractors until they have gone through their own primary decontamination. This procedure is described in Appendix G.

Segregated Equipment Drop

Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.

Boot Wash

A system of wash tubs will be used to remove contaminants from rubber or neoprene work boots.

- o First tub: plain tap water rinse. Use scrub brush to remove gross contamination from boot soles and surfaces.

- o Second tub: tap water wash. Use scrub brush to remove all visible traces of dirt, dust, or other contamination.

Wastewater from boot washing and rinsing will be discharged to the wastewater treatment system; contaminants will be collected and disposed of in accordance with USEPA guidelines. Locations for boot wash facilities are indicated on Figure 7-2.

Protective Work Clothing

With respirator still donned, enter ASARCO's down-draft chamber and turn on air nozzles to remove contaminants while shaking clothing to loosen dust and debris. Prior to entry, the worker should press the button outside the chamber, which activates the light and downdraft fan, to exhaust contaminants from the booth. Respirator may not be removed until cycle is completed. Contractor employees are responsible for cleaning and maintenance of respirators. This procedure must be followed prior to entering lunchrooms or change rooms for workers exposed to airborne levels of arsenic above 100 ug/m^3. If plastic or rubber raingear is worn, visible contamination shall be rinsed prior to changeroom facility entry.

Hygiene Practices

Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in any area where the possibility of contamination exists (e.g., exclusion zone, contamination reduction zone).

Changeroom and Shower Facilities

Upon completion of decontamination procedures, employees will enter the changeroom facility shown on Figure 7-2. Workers will enter the dirty clothes side only for removal of work clothing. Disposable clothing shall be disposed in a waste container, while reusable coveralls shall be placed in a special receptacle for laundering. The above procedure shall be followed after each day's shift. Individuals and laundry facilities conducting washing of reusable coverall have been warned regarding the possibility of arsenic and other metals being present on the clothing.

After removal of work clothing, employees shall enter the shower area and shower thoroughly with soap and water to remove contaminants on skin and hair. Employees will then enter the street clothes side of the changeroom facility to towel dry and don street clothing stored in this area.

Respirator Cleaning and Maintenance

Used respirators shall be dropped off at the ASARCO respirator cleaning facility for daily cleaning and maintenance. Respirator bodies shall be cleaned in hot, soapy water in an ultrasonic unit, rinsed, disinfected, and rinsed once again prior to drying. Cartridges are replaced on request by employees and when the worker experiences difficulty in breathing. Cleaned respirators are picked up prior to the beginning of each shift.

DECONTAMINATION OF VEHICLES

Prior to leaving the contamination reduction zone, vehicles in contact with contaminated dusts and debris will be washed with tap water. The water may contain detergents if necessary to remove contaminants.

Where existing drains are being used for collection of contaminated wastewater generated by dust-suppression activities, vehicles will be cleaned near these drains and the rinse water allowed to enter the wastewater treatment system. Where drains do not exist, decontamination pads will be constructed such that the contaminated rinse waters will be collected and either diverted to wastewater collection drains or drummed and transported to the wastewater treatment system.

APPENDIX E

EMERGENCY NOTIFICATION CONTACTS AND PHONE NUMBERS

EMERGENCY CONTACTS - POST

General emergency number: 911 (Fire, ambulance, police)

ASARCO, Inc. Project Health and Safety Officer Curtis Dungey	(office) 756-0278
Tacoma General Hospital 315 South K Street	(emergency) 594-1050 (general) 594-1000
Poison Control Center	526-2121
Contractors' occupational health clinics	_____
	_____
	_____
	_____
	_____
First Care Clinic N. 26th and Pearl Street	759-6655

APPENDIX F

EMERGENCY ROUTES TO HOSPITAL

Curt Dungey to provide the following:

- Written directions describing in detail the most expedient route to
  - Tacoma General Hospital
  - First Care Clinic
  - any other appropriate emergency medical facilities
- Indications (on map) of the locations of the First Care Clinic or other appropriate emergency medical facilities

Figure F-1.
Route to Hospital

APPENDIX G

CONTRACTOR - SUBMITTED PLANS

APPENDIX H

INFORMATION AND TRAINING TO CONTRACTOR

Arsenic Trioxide

A. Health Hazards

1) Inhalation - irritate lungs, upper respiratory tract, perforated nasal septum. Studies show risk to lung cancer higher with long term exposure. Systemic poisoning: weight loss, nausea, diarrhea, weakness, loss of appetite.

2) Ingestion - severe irritation to lining of stomach.

3) Contact - severe irritation to skin and eyes - discuss protective measures.

B. WISHA Standard

1) PEL - 10 ug/m^3 AL = 5 ug/m^3

2) Personal Hygiene - no eating, drinking, smoking in work area or prior to washing

3) Changeroom/shower facilities

4) Lunchroom areas

5) Respirators - levels of protection required by standard

6) Medical exams - required if exposed more than 30 days per year

7) Clothing and equipment - coveralls, gloves, boots, respirators

8) Exclusion Zones and Regulated Areas

TACOMA PLANT

Provision of Information on
Hazardous Chemicals to Contractors

The following contractor(s) was provided with information on hazardous chemicals to which its employees may be exposed in the course of work at the plant site. Information included the identity of hazardous chemicals at the site and protective measures employees should follow to reduce the possibility of exposure.

Contractor	Date	Hazardous Chemicals

Contractor Signature	ASARCO Signature